

Packaged CHP Accelerator

Introduction

The U.S. Department of Energy's (DOE) **Better Buildings** initiative is a national leadership initiative designed to improve the lives of the American people through public and private leadership in energy innovation with goals of improving energy affordability, productivity, resilience, and security across homes, public and private buildings, and manufacturing facilities. Building upon the progress of the **Combined Heat and Power (CHP) for Resiliency Accelerator**, DOE initiated the **Packaged CHP Accelerator** to validate project performance, cost, and installation time across a variety of CHP packages appropriate for many American buildings, campuses, and bases.

Target Markets and Accelerator Goals

The **Packaged CHP Accelerator** is designed to validate packaged CHP technologies appropriate for commercial, institutional, multi-family, light manufacturing and Federal (including military) facilities and bases. These markets represent about 70% of estimated U.S. CHP technical potential and have long been underdeveloped due to a variety of technical and market barriers. Because of similarities in size, operations, configurations, and energy usage, these applications are conducive to standardized, packaged CHP systems to meet the thermal and electric requirements of their facilities. The development of packaged CHP systems can overcome numerous barriers by reducing design errors, limiting uncertainty about projected performance, shortening project install time, streamlining permitting, and reducing the overall cost of CHP installations.

The overarching goal of the Packaged CHP Accelerator is to research and validate that pre-engineered, technically-validated systems designed to reduce risk for both the CHP user and supplier meet expected performance and can reduce total project costs and installation times for CHP systems by 20% or more. The Accelerator will also identify packaged CHP R&D opportunities and validate new technologies such as Hybrid CHP (CHP systems integrated with PV and energy storage), and grid-serving CHP systems that offer many of the ancillary services required by the Nation's evolving electricity grid while providing primary energy services to the host facility.

What is Packaged CHP?

In the past, CHP installations typically required customized engineering and design, with the systems constructed at the user site. While this practice is still commonly employed, as CHP technologies have become more established, many manufacturers have started offering standardized, factory-built packaged CHP systems that eliminate many of the site-specific engineering requirements. Packaged CHP systems, upon delivery to the end-user site, include major components (prime mover, generator or inverter, heat recovery, switchgear, controls and emissions controls) pre-packaged into single units or, for larger systems, into modules. Packaged CHP system offerings currently range from 10kW to 2-3MW in size, with the concept expected to extend to larger systems over time.

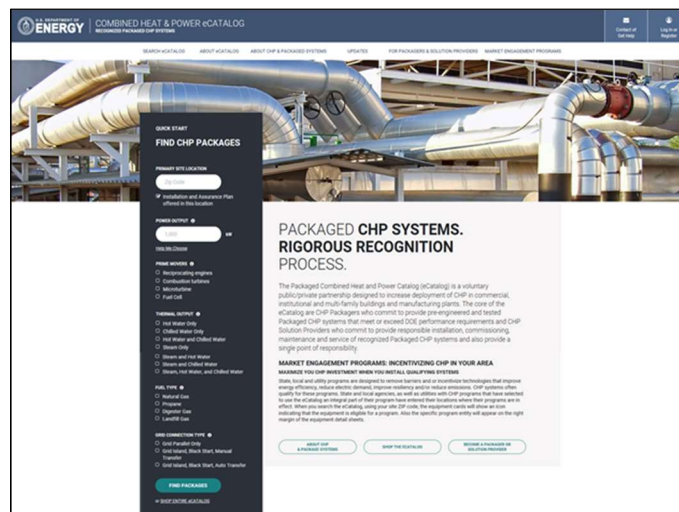


The Accelerator's goals are to:

- ▶ Validate the installations and performance of packaged CHP systems nationally
- ▶ Analyze the project development time and costs of packaged CHP systems enabled through the *eCatalog*
- ▶ Evaluate the integration of new technologies with packaged CHP systems
- ▶ Identify R&D challenges and opportunities around packaged CHP and related technologies

The Packaged CHP eCatalog

Central to the Accelerator is the Packaged CHP *eCatalog*, an open source, web-based system that hosts DOE-recognized packaged CHP systems that include select features designed to reduce economic and performance risk for the CHP user. The core of the *eCatalog* are CHP Packagers who commit to provide pre-engineered and tested Packaged CHP Systems that meet or exceed DOE performance requirements, and CHP Solution Providers who commit to provide responsible installation, commissioning, maintenance and service of recognized Packaged CHP systems and serve as the single point of responsibility for the product. The *eCatalog* provides in-depth search capabilities that allows CHP users and consulting engineers to view the suite of available packaged CHP systems in their area given a variety of site specifications and needs. After entering the site zip code, users can screen the results based on key items such as system size (kW), prime mover (recip. engines, microturbines, gas turbines, or fuel cells), heat recovery (hot water, steam, cooling or combinations), and other system attributes including fuel type, grid connection type, and physical size constraints. The *eCatalog* is focused on packaged CHP systems less than 10 MW in individual prime-mover capacity, and will be routinely updated to add additional Packages, Packagers, and Solution Providers.



Packaged CHP Accelerator Partnership

DOE and **Packaged CHP Accelerator** partners will test a set of DOE-validated¹ packaged CHP systems engineered and/or installed by Accelerator **CHP Supplier Partners** (and contained in the *eCatalog*). **CHP Engagement Partners** (utilities, federal agencies, states, municipalities, associations, etc.) commit to promote Packaged CHP information (via the *eCatalog*) to their customers, affiliates or members and to validate the performance and the benefits in specific CHP markets.

The U.S. Department of Energy commits to the following activities in support of the Accelerator:

- ▶ Provide support for the national, web-based CHP *eCatalog* of DOE-recognized CHP packaged systems offered by pre-qualified CHP Supplier Partners
- ▶ Provide tools and resources to help CHP Engagement Partners promote packaged CHP systems
- ▶ Provide technical assistance support to CHP Engagement Partners and facility owners/operators through the CHP Technical Assistance Partnerships (CHP TAPs)
- ▶ Collect and share best practices and lessons learned information
- ▶ Assist Accelerator Partners overcome challenges and share successful approaches with their peers
- ▶ Provide national recognition to Partners commensurate with their results

For more information, or for directions on how to get involved with the Accelerator or *eCatalog*, please contact the **Packaged CHP Accelerator** at chp@ee.doe.gov.

¹ Engineering-based validation methodology provided by DOE